Lesson 19: Rearranging Formulas

Classwork

Exercise 1

Solve each equation for *.* For part (c), remember a variable symbol, like , , and represents a number.

|  |  |  |
| --- | --- | --- |
|  |  |  |

Exercise 2

Compare your work in parts (a) through (c) above. Did you have to do anything differently to solve for in part (c)?

Exercise 3

Solve the equation for . The variable symbols , , and represent numbers.

**Example 1: Rearranging Familiar Formulas**

The area of a rectangle is in2. The formula for area is .

* If the width is inches, what is the length?
* If the widthis inches, what is the length?
* Rearrange the area formula to solve for .
* Verify that the area formula, solved forwill give the same results foras having solved for in the original area formula.

Exercise 4

Solve each problem two ways. First, substitute the given values and solve for the given variable. Then, solve for the given variable and substitute the given values.

* 1. The perimeter formula for a rectangle is where represents the perimeter, represents the length, and represents the width. Calculate when and .
  2. The area formula for a triangle is , where represents the area; represents the length of the base, and represents the height. Calculate when and .

Exercise 5

Rearrange each formula to solve for the specified variable. Assume no variable is equal to .

1. Given ,
2. Solve for .
3. Solve for .
4. Given ,
5. Solve for .

1. Solve for .

**Example 2: Comparing Equations with one Variable to those with more than one Variable**

|  |  |
| --- | --- |
| **Equation Containing More Than One Variable** | **Related Equation** |
| Solve for . | Solve for . |
| Solve for . | Solve for . |

Lesson Summary

The properties and reasoning used to solve equations apply regardless of how many variables appear in an equation or formula. Rearranging formulas to solve for a specific variable can be useful when solving applied problems.

Problem Set

Solve each equation for .

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
| 1. Solve for . | 1. Solve for . | 1. Solve for . | 1. Solve for . |
| 1. Solve for . | 1. Solve for . | 1. Solve for . | 1. Solve for |

1. The science teacher wrote three equations on a board that relate velocity, distance traveled, , and the time to travel the distance on the board.

|  |  |  |
| --- | --- | --- |
|  |  |  |

Would you need to memorize all three equations or could you just memorize one? Explain your reasoning.